IN THE CLAIMS:

1.-21. (Cancelled)

22. (New) A process for treating a gas, which comprises

contacting a gas stream containing a compound consisting of sulfur and fluorine with a catalyst at a temperature of 400 to 800°C in the presence of steam vapor, said catalyst comprising aluminum oxide and nickel oxide, and

decomposing the compound by hydrolysis and producing a treated gas containing hydrogen fluoride.

23. (New) A process according to claim 22, which further comprises washing the treated gas with water to remove the hydrogen fluoride.

24. (New) A process according to claim 22, which further comprises washing the treated gas with an alkaline solution or slurry to remove the hydrogen fluoride.

25. (New) A process according to claim 22, which further comprises washing the treated gas with water and subsequently contacting the water that has absorbed the hydrogen fluoride with an alkaline solution or slurry.

26. (New) A process according to claim 22, wherein the catalyst further comprises at least one of zinc oxide and titanium oxide.

27. (New) A process according to claim 22, wherein the catalyst consists essentially of alumina and nickel oxide.

28. (New) A process according to claim 22, wherein the compound is SF_6.

29. (New) A process for treating a fluorine compound-containing gas, which comprises

contacting a gas stream containing a compound consisting of sulfur and fluorine with a catalyst comprising alumina as an active component and nickel oxide, said catalyst containing a composite oxide of alumina and nickel oxide,

adding steam or a reaction gas containing steam and oxygen to the gas stream, and

effecting a hydrolysis reaction between the compound and the steam, thereby producing a treated gas containing hydrogen fluoride.

30. (New) A process according to claim 29, which further comprises washing the treated gas with water to remove the hydrogen fluoride.

31. (New) A process according to claim 29, which further comprises washing the treated gas with an alkaline solution or slurry to neutralize the hydrogen fluoride and other acidic compounds.

32. (New) A process according to claim 29, which further comprises washing the treated gas with water and subsequently neutralizing the water that has absorbed the hydrogen fluoride with an alkaline solution or slurry.

33. (New) A process according to claim 29, wherein the catalyst further comprises zinc oxide.

34. (New) A process according to claim 29, wherein the catalyst consists essentially of alumina and nickel oxide.

35. (New) A process according to claim 29, wherein the compound is SF_6.

36. (New) A process according to claim 22, wherein the catalyst contains 7.2 to 49.4% by weight of nickel oxide.

37. (New) A process according to claim 29, wherein the catalyst contains 7.2 to 49.4% by weight of nickel oxide.